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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/009,216	11/08/2001	Li Yang	791 170	5554

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BURR & BROWN

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EXAMINER

TSANG FOSTER, SUSY N

ART UNIT

PAPER NUMBER

1745

DATE MAILED: 12/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/009,216

Applicant(s)

YANG ET AL.

Examiner

Susy N Tsang-Foster

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1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 9/14/2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,9,17-19 and 25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,9,17-19 and 25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date. _____  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Response to Amendment*

1. This Office Action is responsive to the amendment filed on 9/14/2004. Claims 1 and 9 have been amended. Claims 2-8, 10-16, 20-24, and 26-28 have been cancelled. Claims 1, 9, 17-19, and 25 are pending and are finally rejected for reasons necessitated by applicant's amendment.

### *Specification*

2. The amendment filed 9/14/2004 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: On page 2 of the amendment, inserting the phrase "compound may have" before the phrase "a P=O linkage" constitutes new matter. The original disclosure states on page 38 that in the case that an organic phosphorus compound is used, the one having a P=O linkage and gives examples of compounds having a P=O. The original disclosure does not state that in the case that an organic phosphorous compound is used, the compound may have a P=O linkage.

Applicant is required to cancel the new matter in the reply to this Office Action.

***Claim Rejections - 35 USC § 112***

3. Claims 1, 9, 17-19, and 25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claim 1, the limitation “a ring compound containing at least one nitride in a ring and a strong acid which are unitarily combined in a molecule” does not appear to be in the original disclosure since a ring compound containing at least one nitride in a ring is not limited to an organic base as originally recited in claim 1.

Page 17 of the specification states:

“Compounds where an organic base and an inorganic acid are united are specifically compounds wherein, as an organic base, a nitride-containing six-membered ring compound, a nitride-containing polycyclic compound or the like...”

Page 17 of the specification states that an organic base can be a nitride-containing six-membered ring compound, and a nitride-containing polycyclic compound. The limitation as written in claim 1 does not require the ring compound containing at least one nitride in a ring to be an organic base.

Claims depending from claims rejected under 35 USC 112, first paragraph are also rejected for the same.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 9, 18, and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Ono et al. (US 2001/0026890 A1).

Ono et al. disclose an electrolyte composition for a nonaqueous lithium ion secondary battery wherein the electrolyte composition comprises a polymer that is polymerized from a monomer having the general formula  $Q^+-[Y_1-(CH_2CH_2O)_n-Y_2]_m X^-$  where Q represents a nitrogen-containing aromatic heterocyclic atomic group which can form a cation,  $Y_1$  represents a divalent interlocking group,  $Y_2$  represents a substituted or unsubstituted alkyl group, n represents an integer from 2 to 20, m represents an integer of 2 or more, and  $X^-$  represents an anion which can be a halogen ion such as bromide, chloride, and iodide (see abstract and paragraphs 20-23, 29, and 46). The reference also discloses that the nonaqueous secondary battery comprises an electrolyte composition given in paragraphs 21-23 of the reference, a positive electrode, a negative electrode and a lithium salt (paragraphs 23 and 29). The electrolyte composition comprising a polymer polymerized from a monomer of the general formula containing an anion such as iodide, bromide, and chloride reads on the limitation of a ring compound containing at least one nitride in a ring and a strong acid which are unitarily combined in a molecule. The electrolyte may be mixed with a solvent in an amount of up to 50% by weight (paragraph 36).

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The positive electrode can be  $\text{LiMn}_2\text{O}_4$  which inherently has a cubic spinel structure (paragraph 130) and the negative electrode can be a carbon-based material (paragraph 136).

The polymer electrolyte composition disclosed in the reference can be used with a separator (paragraph 158). The polymer electrolyte composition may also be incorporated into the electrode (paragraph 38). A cylindrical cell can be prepared by laminating the positive electrode sheet and the negative electrode sheet with a separator interposed therebetween, winding the laminate, and inserting the laminate into a cylindrical can (paragraph 169).

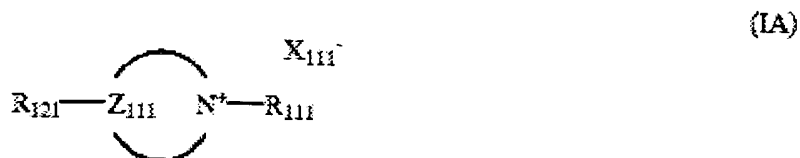
***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 9, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ono (US Patent No. 6,495,067 B1) in view of Linden ("Handbook of Batteries", Second Edition, edited by David Linden. New York: McGraw-Hill, Inc. (1995), p. 36.28).

Ono (US Patent No. 6,495,067 B1) discloses an electrolyte comprising a liquid crystal compound to be used in an electrochemical cell (col. 2, lines 50-54). The liquid crystal compound is represented by general formula (col. 3, line 55 to col. 4, line 8):



wherein  $\text{R}_{111}$  represents a substituted or unsubstituted alkyl or alkenyl group which is bonded to the nitrogen atom either directly or via a divalent linking group;  $\text{Z}_{111}$  represents an atomic group necessary to form a 5- or

6-membered aromatic heterocyclic cation together with the nitrogen atom;  $\text{R}_{121}$  represents a substituent serving to exhibit liquid crystal properties which contains at least one divalent cyclic linking group and at least one substituted or unsubstituted alkyl or alkenyl group; and  $\text{X}_{111}^-$  represents an anion, the compound represented by formula (IA) being preferably represented by formula (I-1) or (I-2).

The  $\text{X}_{111}^-$  anion include halide anions such as chloride, bromide, and iodide (col. 22, lines 53-61).

The electrolyte containing the ionic liquid crystal compound represented by formula (IA) is usable as an electrolyte in lithium secondary batteries (col. 4, lines 28-35). The electrolyte containing the compound (IA) may further comprise a solvent in a proportion of at least 50% by weight based on the electrolyte (col. 21, lines 35-39). The liquid crystal compound (IA) and mixture thereof can be mixed with an alkali salt to provide a liquid crystal composition useful as an electrolyte (col. 35, lines 62-66) and an example of an alkali salt is  $\text{LiPF}_6$  (col. 36, lines 42-

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54). A lithium ion secondary battery inherently comprises a positive electrode, a negative, and a separator.

Ono (US Patent No. 6,495,067 B1) does not disclose that the positive electrode, the negative electrode, and the separator are wound by means of the separator.

Linden teaches that lithium secondary batteries are constructed in a spirally wound configuration in order to optimize rate capability (p. 36.28).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the positive electrode, the negative electrode, and the separator of the lithium rechargeable battery of Ono to be in a spirally wound configuration because the spirally wound configuration optimizes the rate capability of the battery.

8. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ono et al. (US 2001/0026890 A1) in view of Zhong et al. (US Pat. No. 5,700,597).

Ono et al. disclose all the limitations of claim 25 (see above) except that the lithium secondary battery has a capacity of 2 Ah or more.

Zhong et al. '597 teach a lithium battery as a high energy density source for an electric vehicle (col. 1, lines 20-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the lithium secondary battery in the electric vehicle because a lithium secondary battery has high energy density, is light weight, and would not cause exhaust air polluting substances during the operation of the electric vehicle.



It would have also been obvious to one of ordinary skill in the art at the time the invention was made to produce a lithium secondary battery having a capacity of 2Ah or more in order to operate a high energy consuming electronic device such as an electric vehicle since the power requirements of electronic devices differ and it would have been obvious to manufacture lithium batteries with varying capacities for different applications. A person of ordinary skill in the art would be motivated to and would be knowledgeable about how to scale up the amount of active material necessary in a lithium secondary battery in order to provide enough electricity to operate an electric vehicle or any other electronic device.

9. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ono (US Patent No. 6,495,067 B1) in view of Linden ("Handbook of Batteries", Second Edition, edited by David Linden. New York: McGraw-Hill, Inc. (1995), p. 36.28) as applied to claim 1 above, and further in view of Zhong et al. (US Pat. No. 5,700,597).

Ono (US Patent No. 6,495,067 B1) as modified by Linden (see above) teaches all the limitations of claim 25 (see above) except that the lithium secondary battery has a capacity of 2 Ah or more.

Zhong et al '597 teach a lithium battery as a high energy density source for an electric vehicle (col. 1, lines 20-25).

It would have been obvious to one of ordinary skill in the art at the time the invention

was made to use the lithium secondary battery in the electric vehicle because a lithium secondary battery has high energy density, is light weight, and would not cause exhaust air polluting substances during the operation of the electric vehicle.

It would have also been obvious to one of ordinary skill in the art at the time the invention was made to produce a lithium secondary battery having a capacity of 2Ah or more in order to operate a high energy consuming electronic device such as an electric vehicle since the power requirements of electronic devices differ and it would have been obvious to manufacture lithium batteries with varying capacities for different applications. A person of ordinary skill in the art would be motivated to and would be knowledgeable about how to scale up the amount of active material necessary in a lithium secondary battery in order to provide enough electricity to operate an electric vehicle or any other electronic device.

### ***Response to Arguments***

10. Applicant's arguments with respect to claims 1, 9, 17-19, and 25 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

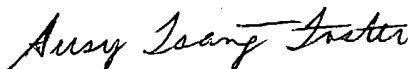
9. Any inquiry concerning this communication or earlier communications should be directed to examiner Susy Tsang-Foster, Ph.D. whose telephone number is (571) 272-1293. The examiner can normally be reached on Monday through Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at (571) 272-1292.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

st/



Susy Tsang-Foster  
Primary Examiner  
Art Unit 1745